

Geometry Date_____ 4.2 Notes Part B

Triangles and Angles (pp 194-197)

State the number of sides in each geometric figure.

1. Trapezoid

4

2. Equilateral triangle

3

3. Rhombus

4

4. Parallelogram

4

5. Scalene Triangle

3

Classifying Triangles by sides

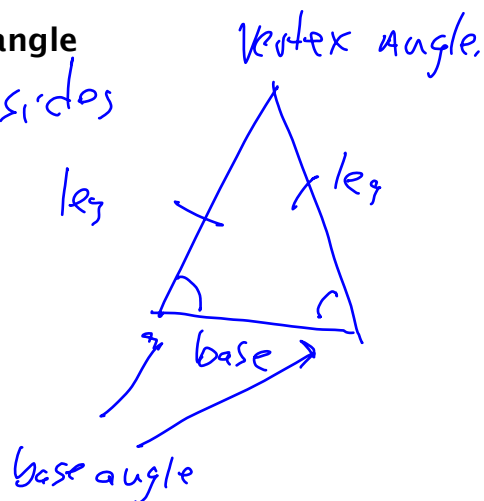
Equilateral Triangle

3 equal sides



Isosceles Triangle

2 equal sides



Scalene Triangle

No equal sides

Classifying Triangles by angles

Acute Triangle

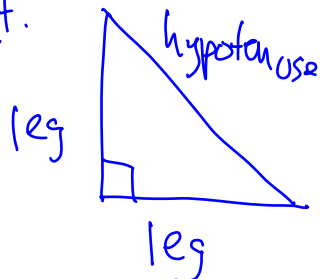
All angles are
congruent

Equiangular triangle

All angles are congruent.

Right Triangle

One angle is
right.



Obtuse Triangle

One angle is obtuse.

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Guided Practice.

6. Classify the triangle.

Equilateral/Equiangular.

The diagram shows a bridge.

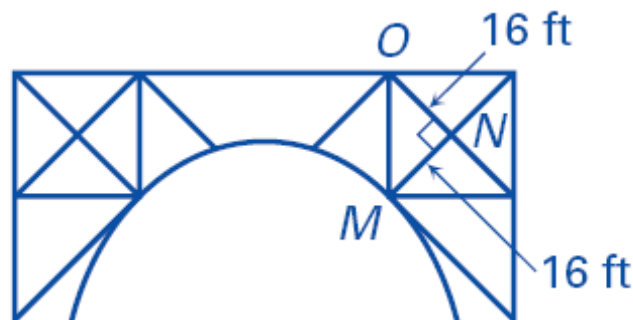
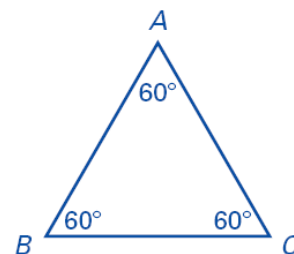
7. Explain why $\triangle MNO$ is an isosceles right triangle.

2 sides are \cong .

8. Identify the legs and hypotenuse of $\triangle MNO$. Which side is the base of the triangle?

legs: \overline{MN} & \overline{NO}

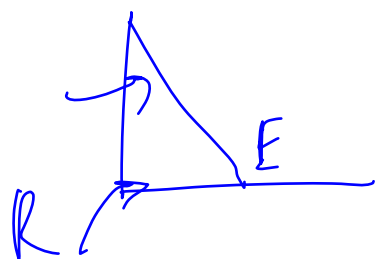
base: \overline{OM}



Triangle Sum Theorem:

The sum of the measures of the interior angles of a triangle is 180° .

Exterior Angle to a Triangle:



Angle formed by extending one side of the triangle.

Exterior Angle Theorem:

The measure of the exterior angle of a \triangle is equal to the sum of the remote interior angles.

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1. **Example:** Find the value of x . Then find the measure of the exterior angle.

$$x + 72 = 2x - 11$$

$$x = 83^\circ$$

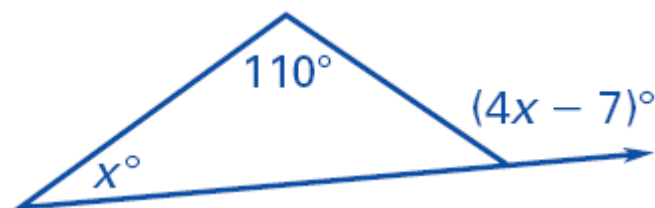


2. **Guided Practice:** Find the value of x . Then find the measure of the exterior angle.

$$110 + x = 4x - 7$$

$$117 = 3x$$

$$x = 39$$



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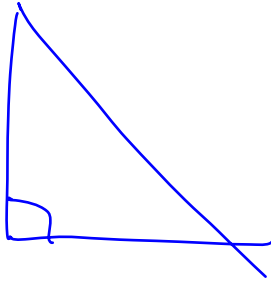
Corollary to a theorem:

A statement that proved shortly from a theorem.

Corollaries to the triangle sum theorem.

- The acute angles of a right triangle are complementary.
- The angles of an equilateral triangle each measure 60° .

3. **Example:** The measure of one acute angle of a right triangle is one fourth the measure of the other acute angle. Find the measure of each acute angle.



$$x + 4x = 90$$

$$5x = 90$$

$$x = 18$$

Guided Practice .

4. The measure of one acute angle of a right triangle is five times the measure of the other acute angle. Find the measure of each acute angle.

$$6x = 90$$

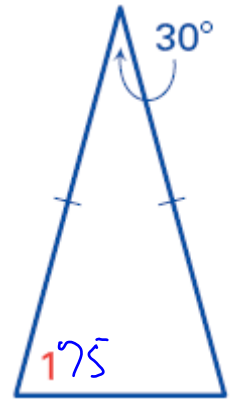
$$x = 15$$

$$15^\circ \text{ \& } 75^\circ$$

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5. C Find $m\angle 1$.

- A. 30°
- B. 60°
- C. 75°
- D. 150°
- E. You need more information to solve this problem.



6. Sketch an obtuse scalene triangle. Label its interior angles 1, 2, and 3. Then draw its exterior angles. Shade the exterior angles.

